CLAIMS:

1. Method of reconstructing projection data from a gated projection data set, the method comprising the steps of: acquiring the gated projection data set; wherein source trajectory used for acquiring the gated projection data set has at least one gap due to gating; determining new projection data corresponding to the at least one gap; and supplementing the gated projection data with the new projection data to compensate for the at least one gap in the source trajectory.

2. The method of claim 1, further comprising the step of: reconstruction a four-dimensional image data set from the gated projection data by using a cone beam computed tomography reconstruction (CBCT) method.

3. The method of claim 2, further comprising the steps of: determining a four-dimensional vector field from the four-dimensional image data set; wherein the four-dimensional vector field describes a motion of an object of interest; and performing a motion compensation of the gated projection data set by using the four-dimensional vector field.

4. The method of claim 3, further comprising the step of; determining the new projection data on the basis of the motion compensated three dimensional image volume.

5. The method of claim 1, further comprising the step of: reconstructing the projection from the gated projection data supplemented with the new projection data; wherein the gated projection data set is a three-dimensional data set.

6. Image processing device, comprising: a memory for storing a gated

projection data set; and a processor for reconstructing projection data from a gated projection data set, wherein the processor is adapted to perform the following operation: acquiring the gated projection data set from the memory; wherein source trajectory used for acquiring the gated projection data set has at least one gap due to gating; determining new projection data corresponding to the at least one gap; and supplementing the gated projection data with the new projection data to compensate for the at least one gap in the source trajectory.

7. The image processing device of claim 6, wherein the processor is further adapted to perform the following operation: reconstruction a four-dimensional image data set from the gated projection data by using a cone beam computed tomography reconstruction (CBCT) method; determining a four-dimensional vector field from the four-dimensional image data set; wherein the four-dimensional vector field describes a motion of an object of interest; performing a motion compensation of the gated projection data set by using the four-dimensional vector field; and determining the new projection data on the basis of the motion compensated three dimensional image volume; wherein the gated projection data set is a three-dimensional data set.

8. Computed tomography apparatus, comprising: a memory for storing a gated projection data set; and a processor for reconstructing projection data from a gated projection data set, wherein the processor is adapted to perform the following operation: acquiring the gated projection data set from the memory; wherein source trajectory used for acquiring the gated projection data set has at least one gap due to gating; determining new projection data corresponding to the at least one gap; and supplementing the gated projection data with the new projection data to compensate for the at least one gap in the source trajectory.

9. A computer program for reconstructing projection data from a gated projection data set, wherein the computer program causes a computer to perform the following operation when the computer program is executed on the computer: acquiring the gated projection data set; wherein source trajectory used for acquiring the gated

projection data set has at least one gap due to gating; determining new projection data corresponding to the at least one gap; and supplementing the gated projection data with the new projection data to compensate for the at least one gap in the source trajectory.

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